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link 71 by a pin 81. One end of the arm 54 is connected to the mounting plate 51 by a pin 62. Another end of the arm 54 is connected to the link 72 by a pin 84.

One end of the link 71 is connected to the arm 53 by the pin 81. Another end of the link 71 is connected to the mounting plate 51 by a pin 82. One end of the link 72 is connected to the arm 54 by the pin 84. Another end of the link 72 is connected to the mounting plate 52 by a pin 83.

Each part of the hinge 50 connected with a pin can be rotated about the pin serving as an axis.

In a case wherein the hidden hinge 50 is mounted in a notebook type personal computer, the notebook type personal computer is in a lapped state (or a closed state) when the hinge is in the state shown in FIG. 3.

FIG. 4 is an illustration of the hidden hinge 50 in an open state of the notebook type personal computer in the case wherein the hidden hinge 50 is mounted in the notebook type personal computer. For example, when a user raises the display of the notebook type personal computer, the link 71 rotates about the pin 82 serving as an axis, and the link 72 rotates about the pin 83 serving as an axis, whereby the display is rotated about the rotational axis of the pin 61.

In the examples shown in FIGS. 3 and 4, the link 71 of the hidden hinge 50 is shorter than the link 72. The reason is as follows. For example, in the case wherein the hidden hinge 50 is mounted in a notebook type personal computer, when a user raises the display, a lower end of the display may abut on the main body of the computer to disable the display from moving if the length of the link 71 is equal to or greater than the length of the link 72.

Specifically, if the link 71 is formed with a greater length, when the mounting plate 51 is oriented substantially perpendicularly to the mounting plate 52 as a result of the rotation of the link 71 about the pin 82, the mounting plate 51 is moved a great distance in the top-to-bottom direction of the figure. Then, a lower end of the display to which the mounting plate 51 is attached can abut on the main body of the computer to stop the movement of the display.

It is therefore desirable to form the link 71 shorter than the link 72 when the hidden hinge 50 is to be mounted in a personal computer or the like. Obviously, the link 71 may be formed longer when the hidden hinge 50 is to be mounted in an apparatus other than personal computers and the like.

In the case of the hidden hinge 50 shown in FIG. 3, the vertical distance required for accommodating the arms can be shorter the distance required for the arms of the hidden hinge 10 shown in FIG. 1.

For example, in the case of the hinge 10 shown in FIG. 1, the vertical distance required for accommodating the arms is the distance from the end 23a of the arm 23 to the end 24a of the arm 24. On the contrary, in the case of the hinge 50 shown in FIG. 3, the vertical distance required for accommodating the arms is the distance from the corner 54b of the arm 54 to the corner 53b of the arm 53.

The hidden hinge 50 shown in FIG. 3 is configured such that an imaginary line connecting the mounting position of the pin 62 and the mounting position of the pin 82 will horizontally extends substantially in the middle of the mounting plate 51. The hinge is also configured such that an imaginary line connecting the mounting position of the pin 63 and the mounting position of the pin 83 will horizontally extends substantially in the middle of the mounting plate 52. Thus, the vertical distance required for accommodating the arms can be made small.

As a result, the use of the hidden hinge 50 according to the embodiment of the present disclosure allows the first and

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second housings of the notebook type personal computer to be provided with a smaller thickness.

Further, the hidden hinge 50 shown in FIG. 3 has no slide mechanism unlike the hidden hinge 10 shown in FIG. 1. As described above, a slide mechanism slides with an end of an arm of the mechanism engaged with a hole of a mounting plate. There is concern about wear of the mechanism attributable to friction or the like, and the mechanism must therefore be designed to have sufficient durability.

The use of the hidden hinge 50 according to the embodiment of the present disclosure allows the first and second housings of the notebook type computer to be provided with sufficient durability even if the housings are formed with a smaller thickness.

FIG. 5 is a view of the hidden hinge 50 in FIG. 4 taken from a different angle. As shown in the figure, the hidden hinge 50 has a sufficient opening/closing range. The opening/closing range of the hidden hinge 50 itself is the range from about 0° to about 180°.

FIG. 6 is an illustration of an exemplary case in which a hidden hinge 50 as shown in FIG. 3 is mounted in a notebook type personal computer. For example, a housing 91 shown in FIG. 6 is the body of a display of the notebook type personal computer, and a housing 92 is the main body of the notebook type personal computer. FIG. 6 shows a closed state of the notebook type personal computer. For the sake of convenience, a see-through view of the apparatus is presented to show the interior of the housings 91 and 92.

In this example, the housing 91 has an inclined surface at an end thereof which is shown on the right side of the figure. In the closed state of the notebook type computer, a part of the hidden hinge 50 is exposed on the top of the housing 92.

FIG. 7 is an illustration of the notebook type personal computer of FIG. 6 showing an open state of the same. For example, when a user raises the housing 91 (display) of the notebook type personal computer shown in FIG. 7, the link 71 rotates about the pin 82, and the link 72 rotates about the pin 83. Thus, the display is rotated about the rotational axis of the pin 61.

As shown in FIG. 7, the hidden hinge 50 is inserted in the housing 92 or the housing 91 to keep it invisible from outside. For the same of convenience, the figure is represented as a see-through view of the apparatus to show the interior of the housings 91 and 92.

FIG. 8 is a view of the notebook type personal computer 90 in FIG. 7 taken from a different angle.

As shown in FIG. 8, when the notebook type personal computer 90 is in the open state, a screen 91a on the housing 91 or the display is exposed, and a user can operate a keyboard 92a on the housing 92. In this state, the hinge is invisibly hidden in a region 95 where the housings 91 and 92 are connected with each other.

When the hidden hinge 50 is used as thus described, the notebook type personal computer 90 can be provided with elegant appearance.

According to the above description, the arms and links of the hidden hinge 50 are connected using pins to mount those elements in a rotatable manner. However, it is not necessarily required to use pins as long as the arms and pins can be rotated. For example, instead of providing the hidden hinge 50 with the pins 61, 62, 63, 81, 82, 83 and 84, the ends of the arms 53 and 54 and the ends of the links 71 and 72 may be formed as engaging portions to allow those elements to be rotatably engaged.

According to the above description of the embodiment, the arms 53 and 54 of the hidden hinge 50 are connected by the pin 61, but it is not necessarily required to connect the arms 53